

Appln. No. 10/687,022
Amdt. dated January 26, 2006

REMARKS/ARGUMENTS

On November 29, 2005, Applicants submitted a full and complete Response to the non-final Office Action dated July 29, 2005.

The present Amendment is submitted in response to a phone call from the Examiner to the undersigned which took place on January 18, 2006 and subsequent phone conversations between the Examiner and the undersigned which took place on January 19, 20 and 23, 2006. Applicants appreciate the time the Examiner took to discuss the present application with the undersigned. During these phone conversations, Claim 66 was discussed based on the rejection over the *Singleton* reference (U.S. Published Patent Application 2001/0031793) which was cited by the Examiner in the Office Action dated July 29, 2005.

Applicants agreed to submit this amendment to further this application towards allowance. Applicants believe that the present amendment which adopts the gist of the phone conversations with the Examiner distinguishes the present invention from the teaching of the *Singleton* reference, and further believe that independent Claim 66 and its pending dependent claims are patentable over the art of record.

I. Status of the Claims

By this amendment, Claims 66, 68, 99, 114 and 119-122 are amended; Claims 67 and 81 are canceled; and Claim 144 is new.

Amendments to Claims 66, 68, 99 and 122 narrow the scope of these claims. No new matter was introduced by way of amendment to these claims.

Amendments to Claims 114 and 119-121 do not change the scope of these claims. The amendment of Claim 114 is to correct a typographical error by replacing 'stabalized' with 'stabilized'. The amendments of Claim 119-121 are to improve claim form by adding the word 'step' after 'the calcining' or 'the drying'. No new matter was introduced by way of amendment to these claims.

Furthermore, Applicants added new Claim 144 which depends from Claim 66.

Claims 66, 68-80 and 82-144 are currently pending.

Claim 66 is the sole independent from which the remainder of the pending claims ultimately depend.

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II. Claims 66, 68, 71-77, 79, 80, 82-92, 95-97, 99, 102-110, 116, 118-124 and 143 are allowable over *Singleton*

By this reply, Applicants amended independent Claim 66 to now recite: “calcining a mixture containing a boehmite material and a structural stabilizer or containing a compound of a structural stabilizer and a boehmite material at a calcination temperature between about 500 °C and about 900 °C to form the stabilized support with improved hydrothermal stability”. This recitation of the calcination temperature range narrows the independent claim. The recitation of “a compound of a structural stabilizer” covers embodiments to which Applicants are entitled and is supported by at least Claim 1. As the structural stabilizer is mixed with the boehmite material, the mixture may comprise the structural stabilizer in ‘pure form’ or may comprise the structural stabilizer in the form of a compound of the structural stabilizer. For example, if the structural stabilizer includes cobalt, the mixture with the boehmite material may comprise a cobalt compound, such as for example a cobalt salt. Applicants further amended Claim 66 to narrow the composition of the structural stabilizer by adding the list of elements of originally-filed Claim 67, except for potassium, lanthanum and barium which were omitted from the Markush group. Please note that the element ytterbium (Yb) in originally-filed Claim 67 was misspelled as ‘yterrbium’; and Applicants corrected this typographical error when inserting the Markush group of Claim 67 into amended Claim 66. The amendments of Claim 66 are supported by the application as filed, for example by at least originally-filed Claims 1 & 67 and paragraphs [0023], [0024], [0053] and [0066] of the specification as filed.

Applicants further canceled Claim 67 which was incorporated into Claim 66.

Applicants further amended Claims 68 and 99 to narrow the list of elements for the composition of the structural stabilizer by removing barium and lanthanum from their respective Markush group. Claim 99 was further amended by changing its dependency from now-canceled Claim 67 to currently-amended Claim 66.

Applicants further canceled Claim 81 which covered a calcination temperature range broader than the range recited in the currently-amended Claim 66 from which it was dependent.

Applicants further amended Claim 122 to modify the calcination temperature range from “between about 300 °C and about 900 °C” (with is broader than the range recited in Claim 66 from which this claim depends) to now recite “between 725 °C and 750 °C” with is narrower than the range recited in Claim 66. The amendment of Claim 122 is supported in the specification as filed, for example in the method of preparation of Examples S1-S5, i.e., paragraphs [0121] and [0122] as originally filed.

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Applicants respectfully traverse the Examiner's rejection of independent Claim 66 and its currently pending dependent Claims 68, 71-77, 79, 80, 82-92, 95-97, 99, 102-110, 116, 118-124 and 143. Applicants submit that Claim 66, as currently-amended, is not anticipated by *Singleton*.

With respect to *Singleton*'s teaching regarding the doping of alumina, *Singleton* only discloses the doping of alumina with lanthanum oxide and/or barium oxide to provide a more thermally stable alumina support. The following elements: lanthanum and barium in the structural stabilizer are not recited in Claim 66, and thus *Singleton*'s teaching on the respective oxides of lanthanum and barium as dopant of alumina does not anticipate Claim 66.

With respect to cobalt and typical promoters (as listed in *Singleton* Page 3 paragraph [0033]) which are impregnated on doped alumina in *Singleton*, *Singleton* clearly regards them as *catalytic components* of the catalyst and not as structural stabilizer(s) for the alumina support as set forth in the present invention (see *Singleton* Page 3, first line of paragraph [0033]). *Singleton* does not disclose or hint that these catalytic elements may be used to provide greater thermal stability to the alumina support, and *Singleton* certainly does not disclose or hint that these catalytic elements may be used to provide greater *hydrothermal* stability to the alumina support. After *Singleton* impregnates cobalt nitrate and one or more promoter compounds onto alumina after the alumina has been doped, *Singleton* further teaches calcining the alumina impregnated with cobalt and one or more promoters at a temperature held at approximately 250-400°C, with a specific example carried out at 300°C (see *Singleton* Page 3, paragraphs [0034] and [0035]). Thus, the temperature used during calcination after impregnation of alumina with cobalt and catalytic promoter(s) in *Singleton* is well below the calcination temperature range recited in currently-amended Claim 66. Furthermore, with regard to cobalt, *Singleton* teaches that the successive exposure of the catalyst to high temperatures can cause an undesirable encapsulation of cobalt particles (*Singleton* Page 2, paragraph [0015]), and for that reason, one having ordinary skill in the art would presume that *Singleton* would not find desirable to calcine the cobalt-impregnated alumina at the high temperatures recited in Claim 66 of the present application, as doing so would result in a less performing catalyst. Thus, *Singleton* does not teach nor desire calcining the cobalt-impregnated alumina at the high temperatures recited in Claim 66 of the present application. Thus, with respect to addition of cobalt or catalytic promoter(s) as those disclosed in *Singleton* to the boehmite, *Singleton* does not anticipate Claim 66.

With respect to titanium as one of the possible elements comprised in the structural stabilizer *Singleton* regards titanium to be an impurity of alumina, as *Singleton* discloses that its addition is incidental during the γ -alumina preparation from aluminum alkoxide (*Singleton* Catalysts 1-3 in

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Table 1; Page 5, paragraphs [0060] & [0063]). Moreover, as stated in the previous Response dated November 29, 2005, one of the purposes for the doping of alumina stated by *Singleton* is the mitigation of the detrimental impact of incidental titanium impurity in alumina on the activity of some cobalt alumina-supported catalysts (see *Singleton* Page 5, paragraph [0064]; Catalyst 4 in Table 1). As such, *Singleton* teaches away from the deliberate addition of titanium to the alumina support due to its detrimental impact on the catalyst's activity.

With respect to aluminum as one of the possible elements comprised in the structural stabilizer, Claim 66 then requires the use of two aluminum-containing materials: the structural stabilizer comprising aluminum and the boehmite material in the method of preparation of the stabilized support. *Singleton* does not teach nor suggest the use of two compounds containing aluminum to make the doped alumina. Thus, with respect to aluminum addition to the alumina precursor, *Singleton* does not anticipate Claim 66.

Furthermore, with respect to the intended effect of the present invention, Claim 66 was further amended to recite 'to form the stabilized support with enhanced hydrothermal stability'. As it was earlier stated in the Response dated November 29, 2005, there is also no teaching nor suggestion in *Singleton* that it would be desirable to 'dope' alumina to obtain a hydrothermally stable alumina support, in which hydrothermal stability not only encompasses stability under high temperature but also in the presence of *steam* (i.e., water vapor). Applicants would like to reiterate the argument presented in the previous Response that, based on *Singleton* as a whole, one having ordinary skill in the art is completely without notice of this important *hydrothermal* effect on the alumina support and is not provided enough guidance in *Singleton* on how to address it.

In view of all the recitations in Claim 66 and its dependent claims that are neither taught nor suggested expressly or implicitly by *Singleton*, and further in view of the lack of guidance from *Singleton* to arrive to the present invention for Applicants' intended purpose, Applicants submit that *Singleton* does not put the public in possession of the use of the Applicants' present claimed process. Applicants respectfully request that the Examiner withdraws the rejections on Claim 66 and its dependent Claims 68, 71-77, 79, 80, 82-92, 95-97, 99, 102-110, 116, 118-124 and 143.

III. Claims 66, 68-80 and 82-143 are allowable over the combination of *Singleton* with *Roy-Auberger*

In the filed Response dated November 29, 2005, Applicants believed that they have fully responded to the rejection of Claims 66-143 under § 103 over *Singleton* in view of *Roy-Auberger*.

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Applicants further believe that the current amendment of Claim 66 from which pending Claims 68-80 and 82-143 respectively depend further distinguishes the claimed invention from the teachings of both cited references. Applicants maintain that the combination of *Singleton* with *Roy-Auberger* cited by the Examiner still fails to teach or suggest all of the elements recited in these rejected claims, as *Roy-Auberger* does not cure the deficiencies and missing elements in *Singleton*'s teachings; and that both references fail to address the problem Applicants are addressing.

Applicants respectfully maintain their traversal of the Examiner's obviousness rejection and respectfully request the withdrawal of the 103(a) rejection on Claims 66, 68-80 and 82-143.

IV. New Claim 144 is allowable.

Applicants further added new claim 144 which is dependent upon currently-amended independent Claim 66, in order to cover additional embodiments to which Applicants are entitled. The new Claim 144 covers the use of more than one structural stabilizer, wherein the other structural stabilizer comprises at least an element as recited in the Markush group of originally-filed Claim 67. Support for new Claim 144 can be found for example in paragraphs [0024], [0030] and [0054] of the specification as filed. Applicants submit that the cancellation of two claims (Claims 67 and 81) in this reply is sufficient to cover this new claim. Applicants further submit that new Claim 144 is allowable because it contains all of the elements of independent Claim 66, which is allowable.

V. Amendments to the Specification

In this reply, Applicants amended paragraphs [0030] and [0037] of the specification as filed to correct a typographical error by replacing 'ytterbium' with its correct spelling: 'ytterbium', and to remove an excess punctuation point at the end of [0037].

Applicants further amended paragraph [00132] of the specification to correct a typographical error in one of the serial numbers of listed patent applications. This currently-amended paragraph [00132] replaces the previous version of this paragraph which was amended in the Response filed on November 29, 2005 to include serial numbers of patent applications that were not available at the time the present application was filed.

Applicants submit that no new matter is added to the specification by way of this amendment to these paragraphs [0030], [0037] and [00132].

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VI. Conclusion

Applicants respectfully request the Examiner to consider this claim amendment which adopts the narrowing language of the independent Claim 66 which was discussed with the Examiner during phone calls on January 18, 19, 20 & 23, 2006. Applicants believe that no new matter is introduced by way of this amendment, and that this amendment places the application in condition for allowance for all of the pending Claims 66, 68-80 and 82-144. Favorable action at the Examiner's earliest convenience is respectfully solicited.

Although Applicants believe that they fully responded to the Office Action dated July 29, 2005 by filing a Response dated November 29, 2005, should a petition for extension of time be necessary in order for this paper to be deemed timely filed, please consider this a petition therefore. If any fee is due, please appropriately charge such fee to Deposit Account Number 16-1575 of ConocoPhillips Company, Houston, Texas.

Should there be any remaining issue which the Examiner believes would possibly be resolved by a conversation, the Examiner is invited to call the undersigned at (281) 293-4751 so that further delay in a Notice of Allowance can be avoided.

Respectfully submitted,



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